EFFECT OF PROVIDING FREE SPUTUM MICROSCOPY SERVICE TO PRIVATE PRACTITIONERS ON CASE NOTIFICATION TO NATIONAL TUBERCULOSIS CONTROL PROGRAM

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Background: This study was undertaken to see whether providing free sputum microscopy services to private practitioners helps in case notification to the national tuberculosis control program. The knowledge, attitudes and practices of these practitioners regarding tuberculosis were also evaluated. **Methods:** A questionnaire was administered to all the private practitioners practicing in a densely populated area of Karachi. They were asked to fill tuberculosis notification cards for the first three months and then for another three months when an incentive in the form of free sputum microscopy was provided to the practitioners. **Results:** Although the majority of the practitioners knew that cough, fever and weight loss are the main symptoms of tuberculosis, less than half knew that blood in sputum, poor appetite and chest pain could also be associated with tuberculosis. Only 66% of the practitioners indicated sputum microscopy as the preferred diagnostic method for tuberculosis. Only 50% of the practitioners self treated the patients, while the remaining half referred their patients to specialists. Around 80% of the practitioners were aware of the four first-line anti-tuberculosis drugs. Less than half of the practitioners considered sputum microscopy as the most useful follow-up investigation in a patient with pulmonary tuberculosis. Generally, there was a poor response in case notification by private practitioners on provision of free sputum microscopy. **Conclusion:** An overwhelming majority of the practitioners had poor knowledge concerning the correct treatment practices in Tuberculosis. Providing sputum free microscopy does not significantly help in improving tuberculosis case notification. Strategies for public-private collaboration in tuberculosis control are needed.

Keywords: tuberculosis, private practice, sputum, microscopy, knowledge, attitude, behaviour, Pakistan.

INTRODUCTION

Tuberculosis (TB) constitutes a major public health problem in most developing countries of the world. The emergence of HIV/AIDS, increased migration and the deterioration of the health services in many countries, has compounded the problem and caused the incidence of TB to rise so rapidly over a few years' time that the World Health Organization (WHO) was compelled to declare it a global emergency in 1993[1], the first declaration of this sort ever.

Globally Pakistan has been ranked 8th in terms of estimated number of cases by WHO, with an incidence of 175/100,000 persons.[2] Pakistan alone accounts for 44% of total TB burden in the Eastern Mediterranean Region of the WHO comprising 23 countries. In a country of 144 million, approximately 1.5 million people suffer from TB indicating a prevalence exceeding 1% of the total population while 210,000 new cases occur each year. Paradoxically, only one in four cases of TB are ever diagnosed in the country. The WHO Global Tuberculosis Report of 2002 mentions the case notification rate for Pakistan was 23/100,000 in the year 2001[2]. From 2000 to 2001, both the Directly Observed Treatment Strategy (DOTS) coverage and DOTS detection rate for Pakistan approximately doubled. At 5.6%, however, the DOTS detection rate is still well below the population coverage of 24% suggesting that many patients do not have access to DOTS even within the designated DOTS areas[2].

Pakistan has a very strong private health sector particularly in the major cities, and it is estimated that from amongst the TB patients seeking treatment approximately 80% initially report to private practitioners (PPs) for their diagnosis and treatment[3]. Resultantly, PPs are currently diagnosing and treating a significant proportion of TB patients in the Karachi metropolis, which houses nearly a third of the population of Pakistan's southern province of Sindh. Furthermore, as yet, linkages of PPs have yet to develop with the Provincial TB Control Program along organized lines. The National tuberculosis control programme (NTP) of Pakistan aims at achieving 100% DOTS coverage by 2005, while Sindh is expected to do the same by August 2003. It is accordingly imperative to make DOTS more comprehensive by involving the private sector in our efforts for Tuberculosis control.

This study was therefore undertaken to assess the impact of free sputum microscopy services to PPs on case notification to the National TB program and also to evaluate their knowledge concerning the diagnostic modalities used and the treatment regimens commonly prescribed in TB.

MATERIAL AND METHODS

The study was performed between May 2002 and September 2002, in Karachi, Pakistan. The study comprised of two stages. Prior to the start of the study, a brief analysis of the current situation of referrals from the PPs to the DOTS sites in Karachi was carried out to provide some baseline data.

In stage one of the study, all the PPs practicing in a radius of around two kilometers of a private sector hospital providing sputum microscopy facilities and located in a densely populated area of Karachi were identified. An attempt was made to develop linkages with the nearest government diagnostic and treatment center.

All private practitioners in this catchment area were invited to attend an awareness workshop regarding TB and its control. This program was facilitated by investigators of the TB program which included a provincial level TB control coordinator. At that time, all the PPs were requested to complete a previously prepared self-administered questionnaire related to knowledge, attitude and practices regarding TB. All the doctors present at the workshop completed and returned the questionnaire at that time while those who were unable to attend the workshop were contacted personally at their clinics and requested to fill the questionnaires. A total of 120 PPs completed the questionnaire. All the PPs were allopathic qualified doctors examining TB patients in their clinics. Anonymity was optional and confidentiality guaranteed. The questionnaire was designed to collect information on number of suspected TB patients seen on an average every month, the common presenting symptoms and the diagnostic, treatment and referral practices employed by the PPs. The workshop impressed upon the participants the need to follow the National Guidelines for the Treatment and Control of Tuberculosis commonly known as 'NTP Guidelines' and the WHO recommendations for TB control. TB notification cards were subsequently given to PP. They were asked to fill patient information on all suspected TB patients over a three month period. These were collected every fortnight by a field assistant specially hired for this purpose.

In stage two, at the end of first three months, PPs were invited to a seminar which again emphasized the importance of TB control and case notification. All the PPs including those who did not participate were delivered letters by hand informing them of free sputum microscopy facility at the local hospital in that area. They were requested to fill referral forms for sputum AFB. Again, these were collected over a three month period every fortnight by the field officer.

At the end of the study, all the PPs were sent a questionnaire. Those who were unable to fill any referral card were asked reasons for not doing so. All PPs were asked to make recommendations for TB control in Pakistan. This question was kept open-ended.

Responses to structured questions were entered and analyzed using Statistical Package for Social Sciences (SPSS) (Version 10.0.1, copyright SPSS; 1989-99). All information was coded before computer entry to retain the confidentiality of the respondents.

Productive cough for more than three weeks with or without symptoms of: fever, night sweats, weight loss, hemoptysis, pleuritic chest pain and dyspnea.

On the spot specimen was taken when the patient was identified as a pulmonary TB suspect. Subsequently, an early morning specimen was obtained by giving the patient a container with the requisite instructions. The third sample was collected when the patient reported at the laboratory.

RESULTS

On an average each of the general practitioners saw 4-5 TB patients in a month. In response to the question about the main symptoms of TB, 94% of PPs mentioned cough, 86% fever and 74% weight loss. 41% thought blood in sputum was the cardinal symptom in TB, while 30% and 17% considered poor appetite and chest pain, respectively as the same.

PPs were inquired about the duration that the main symptoms should last before TB was suspected in a particular patient. 76% percent felt that the duration should be at least 2-4 weeks, whereas 30% considered it to be more than 4 weeks while 4% felt that it should be less than 2 weeks.

Nearly 70% of the PPs were confident of diagnosing patients themselves, whereas 23% referred their patients to a government TB center, and 7.4% referred their cases to specialist clinics. Regarding the possible diagnostic modalities that they would employ prior to making a diagnosis of pulmonary TB, 96% marked chest X-Ray, 48% sputum microscopy, 63% tuberculin test, while 25% thought that clinical examination itself would suffice for the purpose. Furthermore, when asked to name the single most important test to confirm the diagnosis of pulmonary TB, 66% opted for sputum

microscopy, 22% favored chest X-Ray, and 4.8% mentioned tuberculin test while 5.7% preferred PCR.

About 50% of the PPs preferred to treat patients themselves, 23% sought the help of a government TB center, 22% referred the patients to a private consultant, while 6% considered it appropriate to let the patients decide for themselves.

When asked to write the prescription for a 60kg man recently diagnosed as smear positive TB, 83% gave the 4-drug regimen of isoniazid, rifampicin, pyrazinamide and ethambutol for the initial phase. Of these, 80% used individual drugs while 20% gave all 4 drugs in a fixed dose combination (FDC) regimen. Seventeen percent of physicians gave incorrect regimens, including 2, 3 & 5-drug regimens. The correct daily dosage for the initial phase (2 months) was 300mg isoniazid, 600 mg rifampicin, 900 to 1500 mg ethambutol and 1500 to 2000 mg pyrazinamide. The anti-tuberculous therapy prescribed for the initial phase (Tables 1 and 2) indicate gross errors in dosages (only over 50% prescribed the correct dosage of pyrazinamide and ethambutol) and duration (only half prescribed the correct duration of rifampicin, isoniazid and ethambutol.

For the maintenance phase, the correct regimen was either isoniazid/thiacetazone or isoniazid/ethambutol and isoniazid/rifampicin according to the National TB and WHO guidelines respectively. None prescribed thiacetazone. Only 58% prescribed the correct dosage of ethambutol while less than 50% prescribed the correct dosages of rifampicin, isoniazid, ethambutol and thiacetazone. There were 11 different regimens prescribed for the continuation phase. Only 20 (21%) prescribed the correct regimens (Table 3).

42% of the PPs considered sputum microscopy as the most useful follow-up test for pulmonary TB. 33% opted for chest X-Ray, 19% preferred ESR, 5% chose liver function tests, while 1% recommended tuberculin test.

Only 22.5% of the PPs kept a record of their TB patients. All diagnosed cases of tuberculosis detected through sputum microscopy or otherwise were provided effective case management and follow-up using the DOTS strategy.

Table 1: Distribution of the private practitioners in terms of their dosing practices of TB medications for the initial phase.

Drug	Under dose (%)	Correct dose %)	Over dose (%)
Rifampicin	20	76	4
Isoniazid	6	83	11
Pyrazinamide	15	52	33
Ethambutol	10	51	39
Streptomycin	0	60	40

Table 2: Distribution of the private practitioners in terms of the duration for which TB medications are given for the initial phase.

Drug	Under duration (%)	Correct duration (%)	Over duration (%)
Rifampicin	1	50	49
Isoniazid	0	52	48
Pyrazinamide	0	61	39
Ethambutol	0	53	47
Streptomycin	20	80	0
Myrin P	41	48	11

Table 3: Frequency of the different Anti tuberculous medications prescribed during the continuation phase.

Drug name	Number (%)
H+I	19 (20.4%)
H+I+P	8 (8.6%)
H+I+P+E	7 (7.5%)
H+I+E	20 (21.5%)
H+I+E+Myrin-P	1 (1.1%)
H+P+E	1 (1.1%)
H+E	1 (1.1%)
Myrin	2 (2.2%)
Myrin-P	21(22.6%)
I+P+E	1 (1.1%)
I+E	12 (12.9%)

H= Rifampicin I=Isoniazid E=Ethambutol
P=Pyrazinamide Myrin=Isoniazid, Ethambutol, Rifampicin
Myrin -P= Isoniazid, Ethambutol, Pyrazinamide, Rifampicin

51 out of 103 PPs filled notification cards before the incentive of free sputum microscopy was provided while only 35 filled referral cards for sputum AFB after the provision of incentive. Of the 68 who did not fill the referral card, 32 said that they were too busy. 5 were of the view that filling of the referral card was not a good idea. 31 said that they did not see any patient during the three month period.

At the conclusion of study, PPs were asked about their views on how to control TB in Pakistan, 52 of 103 mentioned that sputum microscopy facility alone is not enough for the PPs and that there should be availability of free chest X ray as well as free blood tests for their patients. A few demanded for monetary incentive. Eighteen suggested conducting of frequent health education and awareness programs for the PPs.

All diagnosed cases of tuberculosis detected through sputum microscopy or otherwise were planned for being provided effective case management and follow-up using the DOTS strategy through government diagnostic and treatment center. However, during the period of our study, no paramedics or other government outreach workers were available to provide DOTS at the nearby facility.

DISCUSSION

Private sector is the first source of help for a large number of TB patients in this part of the world. Patients go to private health care facility because of resource shortages in the public sector, and its inability to meet population expectations thus far[5]. Most patients go to private practitioners because of their more convenient hours and personalized services[6]. However, the knowledge and practices amongst these practitioners have not been found to be satisfactory[7,8,9]. Many PP in Pakistan practice after completing 5 years of graduate training. This is different from PPs in the west who obtain atleast three years of postgraduate training before practicing independently. The poor performance of private doctors, in our part, clearly shows the inadequacy of their undergraduate as well as in-practice training.

Majority of the PPs in the study were aware that cough, fever and weight loss were the main presenting symptoms of TB, but less than 50% knew that blood in a sputum, poor appetite and chest pain could also be associated with TB.

While 70% of PPs were aware that TB needs to be suspected if the clinical symptoms last 2-4 weeks, 30% incorrectly thought the symptoms need to last for more than 4 weeks before the diagnosis of TB could be considered. Such delay in diagnosis would not only result in increased morbidity and mortality for the patients, but would also facilitate the spread of the disease amongst the contacts.

Over dependence of PPs on chest X ray[10] as the diagnostic tool as well as for follow-up of a case with pulmonary TB was noteworthy. Use of sputum microscopy with or without other investigations for diagnosis for TB by 48% and as a follow-up test by only 42% highlights the indifference of PP to public health implication of the sputum status of TB patients. It was surprising to note that 66% identified sputum microscopy to be the single most important test for diagnosis of pulmonary TB when actually only 48% recommended it. This shows that PP often do not practice what they know is medically correct. A probable reason for this could be that X-rays are financially more viable to the referring doctor than the cheaper sputum examination especially in cases where there is some financial arrangement between the doctor and the diagnostic center[10].

In our study, 30% of the PPs were not confident enough to diagnose TB on their own and hence preferred to refer their patients either to government TB centers or to private clinics. This figure indicates lack of awareness amongst PPs who are the source of medical help for the majority of patients[11]. This high referral rate could be one of the possible reasons for the poor control of the disease, as it can lead to patients being lost to follow-up.

23% of the patients were being referred to a government TB facility. The figure of 38% was reported by a study done in Delhi, India[12]. This reflects the lack of faith PPs have in a government facility. Other reason is probably the loss of financial benefits PPs would incur on referring the patients to government run clinics.

In terms of treatment practices, a significant number were either giving inappropriate dosage or lower than WHO-NTP recommended duration of anti-tuberculosis therapy. This is consistent with the Nepal study which showed that about half the PPs were giving correct dosages, whereas 69% were treating for inappropriate duration[6]. Improper case management not only compromises patient outcome but also exposes family members to unnecessary risk[6]. These inappropriate regimens in terms of dosage and duration are probably the most important factor leading to a rise in multi-drug resistant (MDR) TB in Pakistan[13]. In Karachi alone, the resistance rates for the 4 first line drugs are 27%, 15%, 11% and 13% for isoniazid, ethambutol, rifampicin and streptomycin respectively[13].

Only 25 % PPs kept a record of their patients which means that tracing treatment defaulters is close to impossible. It is universally accepted that a partially treated TB patient is worse than an untreated one as the chronic cases are the ones who excrete MDR organisms and increase the community burden of TB[14]. It cannot be over emphasized that essential record keeping and treatment of defaulters are of utmost importance for the control of TB.

It has been suggested by many experts that providing free sputum microscopy services to PPs can help increase the TB detection and notification leading to a better TB management[10]. Based on these recommendations, free sputum microscopy services were provided. It was disappointing to note that only 37 out of 103 PPs returned notification and referral cards for sputum AFB. The decline in the number could be because doctors were expecting monetary incentive for their participation in the study. Many PPs remarked that incentive for free sputum microscopy was for the patients and there was no incentive for them in the study. Another probable reason could be the lack of faith PPs have in the laboratory facilities.

Another very disturbing aspect was the fact that more than 50% PPs suggested of free chest x ray facility and other blood tests to control TB in Pakistan. This recommendation came despite the seminar on National guidelines for TB management at the start of the study which had emphasized on

sputum microscopy as the best diagnostic modality for TB.

This study was one of the few ever projects carried out in Pakistan in the context of private/public collaboration in TB control. As the Provincial TB control Program is engaged in currently expanding the DOTS coverage in Sindh, a tremendous need exists for involving the huge private sector in the major cities in TB Control efforts. It was our hypothesis that better case notification could ensue through provision of certain incentives to PPs leading us to reach these patients and bring them under Provincial TB Control Program. However, the study revealed a very disappointing state of affairs. With the current situation, a multifaceted approach has to be adopted to improve TB management. The gaps in the knowledge and practices of PPs ought to be addressed first. As national resources of expertise, NTPs should be strengthened to advise, contribute and monitor undergraduate, post-graduate and continuing medical education in TB treatment[4]. A simple booklet should be devised and distributed to PPs to provide clear information on TB treatment and prevention. Moreover, NTPs should help educate the public about TB, its treatment and where to receive it. The situation warrants better collaborative efforts between PPs and public health services[15]. These include inviting representatives of private doctors to participate in the planning process of TB control activities, involving them in case-finding activities within their areas of practice, providing them with free or subsidized but reliable laboratory services, making drugs available for the patient referred by the private doctor to the TB centre or supplying drugs to individual doctors on submission of reports and records. Linkages need to be established between DOTS and PPs. DOTS program need to expand rapidly. Currently, only 4-5 such centers exist in Karachi. The physicians have to be ensured that patients will not be snatched away from them despite their registration at the government diagnostic and treatment centre and that the patient will continue to retain his rapport with their PPs. It is important to provide recognition to PPs for their services. Private clinics working on the recommendations of National TB Guidelines could be made satellite DOT centers. This would allow more enthusiastic participation of the PPs. Last, the problems encountered by the PPs should be considered at each stage.

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